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β-decay and Coulomb excitation of neutron-rich Mn and Fe isotopes at ISOLDE

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The first hint for onset of deformation south of 68Ni came from a beta decay experiment on 64,66Mn at ISOLDE back in 1999 [1]. This experiment was possible thanks to the availability of the selective Resonance Ionization Laser Ion Source. In the ten years since then, much structural information has been obtained on radioactive neutron rich isotopes in this region. In this contribution a short summary will be given of recent discoveries south of 68Ni.

Now, 10 years later, a beta decay experiment was performed at ISOLDE on 60-68Mn with the LISOL tape station. Some of the high quality spectra will be shown and first results will be presented. A comparison will be made with recently obtained spectra from in-flight facilities.

It will be shown that online a factor ten increase in yield could be achieved by further optimizing the laser ionization scheme of the neutron rich Mn isotopes with A>=65.

The A=62 and 63 Mn beams were also post-accelerated at REX-ISOLDE and Coulomb excitation has been induced on 62,63Mn and 62Fe at the MINIBALL setup. The latter was possible by making use of the in-trap decay of the short lived 62Mn isotope. The combined results from Coulomb excitation and beta decay of the pure and intense 62Mn beam will be shown.

[1] M. Hannawald et al., PRL 82, 1391 (1999)

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